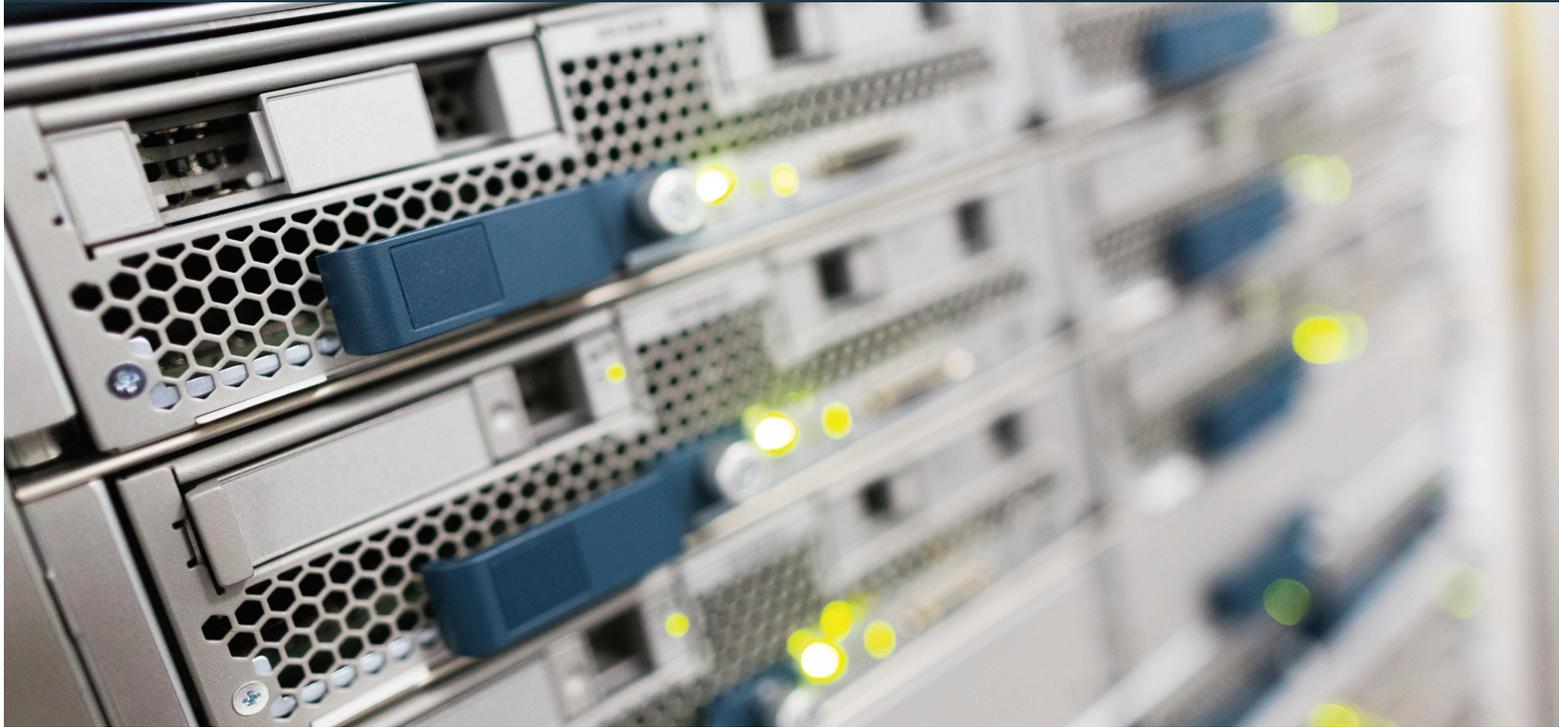




Innovative Solutions. Trusted Performance. Intelligently Engineered.



Never Drop a Call With Ecessa SIP Proxy

White Paper

Ecessa SD-WAN products - Ecessa Edge™, PowerLink™ and WANworX™ - enable real time traffic like VoIP, video and VDI - or remote desktop traffic - to be deployed reliably across multiple links for redundant connectivity. Automatic Internet link failover ensures critical traffic like VoIP or SIP calls continue, even in the case of a ISP or carrier outage. Businesses that deploy Ecessa SD-WAN get the benefits of greater reliability, resiliency, scalability and performance for their business networks. Never drop a call again.

The Advantages of SIP

Broadband Internet connectivity, and the technology innovations that have been developed around it, have driven fast, convenient adoption of new cloud-based applications for businesses worldwide. Adoption of standard protocols, like Session Initiation Protocol (SIP), simplifies the complexities of managing independent, proprietary networks and their disparate latency and jitter performance characteristics. Additionally, there are challenges involved in coping with different IP addresses, message formats and diverse feature sets. SIP-enabled devices and the applications that run on them are creating an array of new services and bundled features for every business.

Implementing SIP technologies within a converged IP network offers many benefits, including increased user productivity, vendor independence with greater choice of applications and end-point devices (phones, computers, etc.), and the potential to reduce network and equipment costs, and the management of the communications infrastructure.

The Opportunity for Partners and UCaaS Providers

In today's competitive business environment, carriers, Telephony and hosted Unified Communications as a Service (UCaaS) providers are looking for new revenue generating services that are sticky and integrate more services into a single offering. SIP-based voice traffic, or Voice over IP (VoIP) traffic is at the very heart of these new service offerings. In designing and implementing SIP-enabled networks, Telephony and VoIP providers are required to deliver first-class performance levels, five-nines of reliability and availability, and flexible scalability in order to guarantee call quality. To realistically offer these new services, the hosting or co-locating of customer applications based on SIP services must have fault-tolerant reliability built-in to their network.

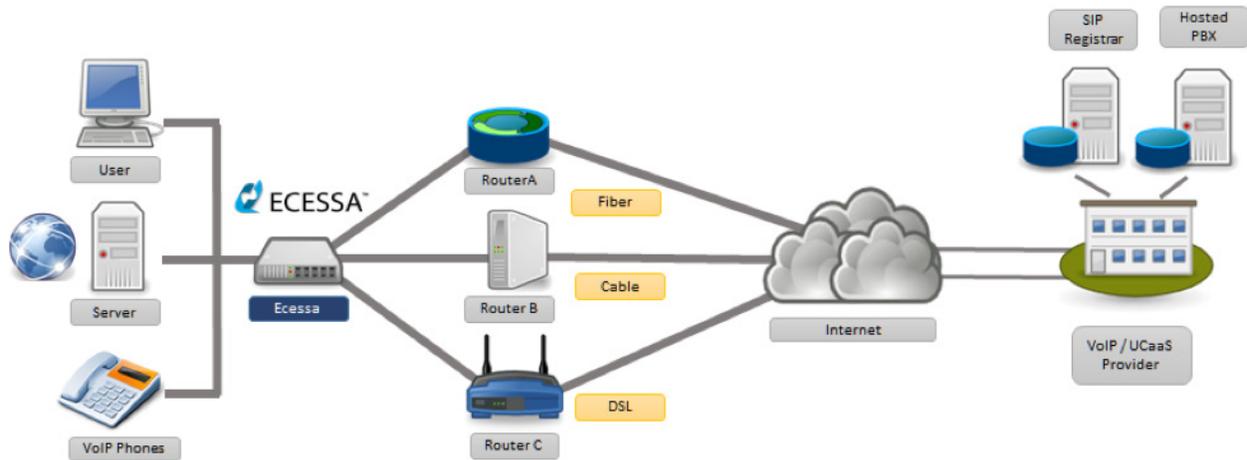
Service providers can enhance revenue by offering a rich set of converged services to small-to-medium sized enterprises. They can economize their investments by implementing a network infrastructure that provides the best match of technology within a pricing structure from third-party suppliers that will allow them to be competitive. As service providers build network infrastructure to support these new revenue streams from SIP-based traffic, they should closely evaluate the solutions that will help them maximize new revenue with the most affordable infrastructure cost to deliver them.

Currently, there are two ways VoIP services are delivered. One approach is where large telcos and carriers provide dedicated point-to-point circuits to their customers. The service provider owns the network from end-to-end and can deliver reliable VoIP service quality – at a premium cost. Another way VoIP services are delivered is by Telephony and VoIP providers running their application services by connecting to the customer's existing Internet link (typically a T1 or some type of broadband circuit), or they may offer to sell an Internet link if the customer does not already have one. However, in this case, the service provider does not have full control of the Internet connectivity from end-to-end. They are relying on the public Internet; and most likely using a single link. Without a doubt, the reliability and quality for the Internet connectivity is not guaranteed. Ecessa SD-WAN solutions enable Telephony and VoIP providers with the ability to offer a "last mile" solution for reliable and optimized performance for voice over Internet connectivity. Ecessa SD-WAN delivers two primary benefits to voice over the Internet; protection from network downtime and network performance optimization.

Protection From Network Downtime

Protection Against Link Outages

Ecessa SD-WAN products essentially converge the SIP network together by load balancing and providing automatic failover of multiple WAN links. Ecessa acts as a front-end controller, managing diverse WAN links, service providers and bandwidth capacities, to provide a redundant SIP origination and termination solution. All Ecessa products include a SIP Proxy, SIP registrar and NAT device, to efficiently allow SIP traffic to traverse within a LAN-to-LAN environment, and also from the LAN-to-WAN environment, to ensure high-availability and reliability of SIP-based services.



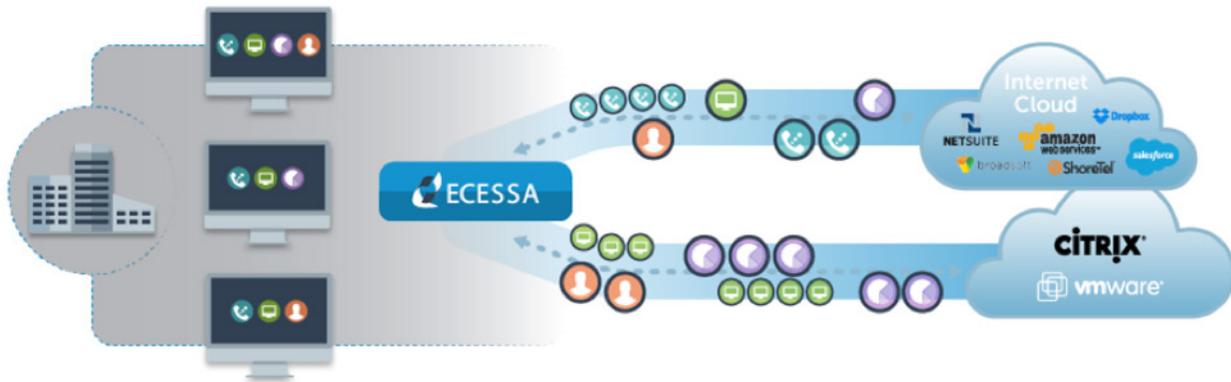
This diagram shows Ecessa SD-WAN managing SIP traffic among multiple Internet links for redundancy.

By intelligently directing SIP traffic among multiple WAN links and/or service provider connections, Ecessa eliminates a key point-of-failure. The built-in “session-aware” SIP Proxy sets up calls by rewriting private IP addresses and ports to public IP addresses and ports for controlling the management of connections and IP addresses within the SIP-enabled network.

Network Performance Optimization

Protection Against Jitter

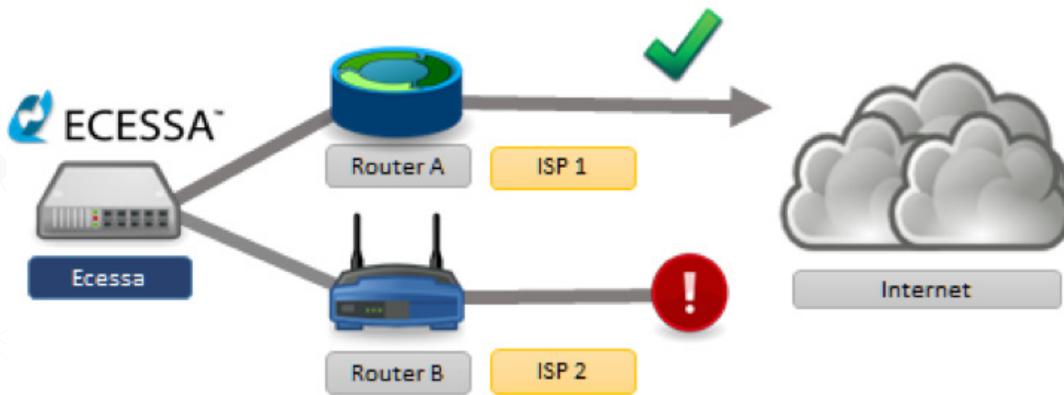
By alleviating network congestion, Ecessa addresses one of the primary causes of jitter. Intelligently load balancing both inbound and outbound traffic allows traffic to be directed to the best available connections with the most available bandwidth at any point in time. The ability to utilize multiple, affordable broadband connections provides a larger pool of bandwidth – at a lower cost. Ecessa’s Quality of Service (QoS) rules can be configured to guarantee priority for SIP traffic - maximizing the combined available bandwidth.



In this diagram, different business traffic is prioritized and routed over different connections, eliminating congestion and intelligently failing over when an outage is detected.

Protection Against Latency

Ecessa SD-WAN monitors Internet connections for latency to ensure minimum standards are enforced. This ensures that both inbound and outbound SIP connections do not get directed to a connection with high latency. Ecessa products test all Internet connections for latency prior to a call being established, and then directs traffic to the connection with the lowest latency.



In this diagram, the Ecessa SD-WAN product is testing each line for latency and selecting the best path for traffic, making sure to prioritize real-time, business critical traffic.

Inbound Protection From Latency

During initial set-up, Ecessa directs inbound calls to the best possible Internet connection based on the criteria listed above. Ecessa's SIP Proxy initiates SIP re-invites to direct calls to Internet connections with more available bandwidth and/or lower latency. The Ecessa products also have an Authoritative DNS feature to guarantee that inbound failover happens as quickly as possible. These two features make sure that SIP traffic can seamlessly failover, without dropping a call, if there is a disruption with one of the ISP or carrier connections.

The Market Opportunity

The market opportunity for SIP technology and UCaaS services is growing rapidly. However, there are critical factors that must be considered when architecting and deploying a SIP-based network. These factors include network reliability, flexible scalability and performance.

To be able to manage and scale the demand for SIP-based networks, the WAN architecture needs to be fault-tolerant, consisting of two or more Internet links. To manage this, Ecessa SD-WAN products provide automatic link load balancing, failover and flexible link scaling. When deployed in a redundant network, Ecessa detects network bottlenecks and service provider outages, and automatically directs traffic around them without the need for human intervention. The important thing to keep in mind is that without redundant network connections, no matter how much effort is made to provide optimum performance, if the network connection goes down, the application will go down too. Ecessa SD-WAN allows the entire multi-networked WAN infrastructure to be monitored and managed as a single element, creating a virtual Internet infrastructure which greatly simplifies the network deployment and management.

SIP traffic needs to be load balanced among multiple and diverse Internet connections, with session persistence based on the unique SIP caller ID to ensure application and transaction integrity. Ecessa's SIP Proxy takes control of call integrity, ensuring that traffic persists to the correct destination, and provides stateful session failover in the event of a service provider outage. Additionally, to ensure SIP service reliability and high-availability, Ecessa checks the availability of all the network connections associated with it and directs traffic accordingly.

Ecessa SD-WAN Delivers:

- External SIP registration tracking - caching from the registrar server
- Real-time VoIP failover
- Integrated SIP Proxy
- Integrated SIP registrar (for authentication and registration)
- Easy VoIP user configuration - secure authentication for user accounts and passwords
- Inbound DNS load balancing
- Outbound intelligent load balancing
- Transparent call handling - optimize voice reliability without sacrificing performance
- LAN-to-LAN direct routing
- Seamless call failover for inbound and outbound connectivity
- Elimination of problems associated with NAT
- Optimized SIP-enabled traffic over the WAN according to throughput capacity
- QoS capabilities for bandwidth management that guarantee SIP-enabled applications get the bandwidth required for optimal performance

Security

As UCaaS and SIP-based network deployments grow, the need for robust security solutions will become a vital issue for the service provider. SIP network security is based upon several technologies that keep potential attackers from damaging the network; Ecessa SD-WAN products include a built-in firewall and VPN gateway. The consolidation of these capabilities simplifies network complexity, lowers costs associated with multiple devices, and lowers support and maintenance costs.

Ecessa's SIP Proxy, SIP registrar and firewall act as a single point of contact for outside SIP traffic, to hide downstream proxies and SIP clients from the outside. The integrated firewall supports specific firewall rules to allow the establishment of voice calls. Additionally, Ecessa SD-WAN products perform NATing of the SIP and call traffic.

Summary

SIP-enabled applications such as UCaaS, including VoIP, video and VDI remote desktop sessions are changing the way businesses worldwide communicate and conduct daily business. This transformation therefore provides a massive new revenue opportunity for carriers, hosted service providers and telecom partners who service and support SMB and enterprise customers. As with the Internet, the growth expectations, and the many application innovations that are to come from SIP technology and UCaaS services offer tremendous opportunities. However, there are critical factors that must be considered, such as network reliability, flexible scalability, high-availability and performance.

In developing a SIP-based network to take advantage of this opportunity, service providers must ensure the network infrastructure will have proper network resiliency, reliability and performance to ensure customer satisfaction.

Deploying Ecessa SD-WAN solutions to support SIP-based applications helps ensure affordable network availability that can be easily and flexibly extended for ongoing growth and reliable connectivity for the many applications that are delivered.

Existing Partners

The following service providers support the Ecessa SIP Proxy feature and a Never Down™ VoIP call and UCaaS experience.



Additional Resources

Learn more about Ecessa's SIP Proxy features, how it works and how you can integrate it into your network environment for maximum benefits.

More about real-time applications

<http://www.ecessa.com/voip-vdi-video/>

More about the PowerLink appliance

<http://www.ecessa.com/powerlink/>

More about the Edge appliance

<https://www.ecessa.com/ecessa-edge/>

More on the VoIP Proxy feature within the Ecessa appliances

<https://support.ecessa.com/hc/en-us/articles/201768755-Ecessa-VoIP-Proxy-Manual>